

UTAH DIVISION OF WATER QUALITY

195 North 1950 West

PO Box 144870

Salt Lake City, Utah 84114-4870

Willard Bay Project Proposal Form

NOTE: Proposal must be no longer than 6 pages. Supplemental documents such as letters of support, information to demonstrate previous project implementation and other relative supportive documents may be submitted in addition to this form.

Applicant Name: Utah Division of Forestry Fire and State Lands

Project Title: Marsh Master Purchase for Phragmites Management

Agency or Business Name: Utah Division of Forestry, Fire and State Lands

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☒ Government Agency

Individual Estimated Project Costs:

Phragmites-Marsh Master Budget	
Expense	Total Cost
Marsh Master-Mower/Sprayer and Trailer	\$162,800.00
Additional Attachments	\$ 25,200.00
Total Grant Request	\$ 188,000.00

Other sources of project funding:

The Division of Forestry, Fire and State Lands (FFSL) receives annual funding for Phragmites management on the Great Salt Lake. This funding is used solely for treatment and removal of Phragmites. The purchase of the Marsh Master will

increase the effectiveness of this annual funding for Phragmites managment on the Great Salt Lake.


Partners in this work will include the following:

Randy Berger- Division of Wildlife Resources

Great Salt Lake Advisory Council

Leland Myers- Central Davis Sewer District

Karin Kettenring Utah State University Department of Watershed Sciences

Signature  Date 5/5/14
Applicant

Marsh Master Purchase for Phragmites Management

The occurrence of non-native Phragmites on the Great Salt Lake has dramatically increased over the last 30 years. Phragmites now dominates approximately one-third of the wetland areas surrounding the Great Salt Lake. Invasion of Phragmites will significantly diminish the ecosystem services that the Lake provides by posing the following threats to the Great Salt Lake ecosystem:

- Reduces native wetlands and the associated species by blocking sunlight.
- Diminishes native wildlife due to its dense growth.
- Excludes favorable plants species use for forage and nesting habitat.
- Alters hydrology by trapping sediments and reducing water movement.
- Limits lake access for recreation, research, and search and rescue.

The State of Utah Division of Forestry, Fire and State Lands (Division) has management authority over 359,000 acres of Great Salt Lake wetlands. Approximately 22,000 acres of the eastern shoreline of GSL are inundated with Phragmites. In recent years FFSL has promoted increased research and implementation of active management on the Great Salt Lake in attempt to control the spread of Phragmites, but limited resources have proved to become a significant barrier to effective management of Phragmites on Great Salt Lake.

The Division is currently in the process of creating a Great Salt Lake Phragmites Strategic Management Plan. The plan will outline the following objectives: Identify Division goals, incorporate current scientific research, utilize current stakeholder plans, identify best management practices, prioritize treatment areas, identify follow-up treatments and re-vegetation strategies, identify equipment needs and establish effective monitoring protocols. These objectives will help the Division effectively establish a long-term plan for Phragmites management on the Great Salt Lake.

In 2014 FFSL has identified 15 priority areas along the eastern shore of the Great Salt Lake to begin aerial herbicide treatments. Upon completion of herbicide treatment of these areas, follow-up treatments will be required in subsequent years to remove dead Phragmites material in order to allow native vegetation to be re-introduced. In the past this material has been removed with prescribed burning practices. In recent years the ability to conduct these burns on the Great Salt Lake has been significantly limited due to an increased air quality concerns along the Wasatch Front. This reality has forced FFSL and other stakeholders to begin using alternative options for physical Phragmites removal.

The most effective alternative strategy for physical removal of Phragmites is the use of a Marsh Master. The Marsh Master is a specialized amphibious machine that can mow and break down large swaths of dead Phragmites in order to increase the rate of decomposition and provide sunlight to bare wetland soil. The Marsh Master has been effectively used throughout the country for this specific purpose. For these reasons, FFSL is requesting funding from the DWQ Willard Bay mitigation funding to purchase a Marsh Master all necessary operating equipment. The purchase of the Marsh Master will increase the Division's ability to effectively utilize and leverage other Phragmites management funding that has been received and will significantly improve the Division's ability to manage and control Phragmites on the Great Salt Lake.

The Division has recently looked into several options for cutting and removing treated Phragmites. Without the purchase of the Marsh Master the Division would be required to use private contractors to complete the necessary Phragmites follow-up treatments. The cost of this alternative is not currently financially feasible to the Division due to the amount of acreage of sovereign land that requires treatment. Thus we are pursuing the option of purchasing a Marsh Master for permanent use. Table 1 illustrates the proposed cost of contract mowing over a three year period:

Table 1:

Proposed Cost of Contract Mowing/3-years			
Year	Acreage	Contract Mowing Cost/Per Acre	Total Cost
2014	1000	\$200.00	\$200,000.00
2015	2000	\$200.00	\$400,000.00
2016	2000	\$200.00	\$400,000.00
Total	5000	\$200.00	\$1,000,000.00

The Division has currently identified approximately 22,000 acres of Phragmites located on Sovereign lands. If funding permits, required Phragmites management and mowing will be required beyond this three year period, which would result in a significant financial increase, beyond what is illustrated in Table 1.

If funding for the purchase of the Marsh Master is approved, the Division can reduce these estimated treatment costs considerably over the three year period. The following table identifies the costs to the Division for the same three-year period if a Marsh Master is purchased:

Table 2.

Proposed Cost of Division Mowing/ 3-years						
Year	Acres	Marsh Master Purchase	Operation and Maintenance Cost/Per Acre	Operation and Maintenance Total	FFSL Operator/Per Hour	Total Cost
2014	1000	\$188,000.00	\$14.00	\$14,000.00	\$15,000.00	\$217,000.00
2015	2000	0	\$14.00	\$28,000.00	\$30,000.00	\$58,000.00
2016	2000	0	\$14.00	\$28,000.00	\$30,000.00	\$58,000.00
Total	4000	\$178,615.00	\$14.00	\$70,000.00	\$75,000.00	\$333,000.00

The financial benefits of purchasing a Marsh Master are considerable over this short three-year period and will continue to increase as the use of the Marsh Master continues beyond this time period.

How will the Marsh Master be used?

The Division is working closely with numerous stakeholders on the Lake to begin active management of Phragmites. Many of these stakeholders are faced with the same challenge of mowing and removing Phragmites after herbicide treatment. Several of these stakeholders have recently approached the Division about the possibility of purchasing a Marsh Master that can be used as an effective management tool to help complete partner projects controlling Phragmites and restoring wildlife habitat.

Central Davis Sewer District has approached FFSL to partner on a proposed project that is located on the North side of Farmington Bay. This area has seen a continuous invasion of Phragmites since the late 1990's. Phragmites invasion has steadily increased across these wetland areas as a result of the receding lake levels. In addition to the abundance of Phragmites, this wetted area has also provided an expanded breeding ground for mosquitoes. The Phragmites expansion in this area is highlighted in the attached photographs taken of Farmington Bay from 2002 to 2009. These photographs demonstrate the occurrence of Phragmites invasion on the Great Salt Lake at one specific location, but provide an excellent visual representation of the problem. Each photograph identifies the Kayes Creek inflow located in the North part of Farmington Bay.

Photo number 1 identifies a small patch of Phragmites along Kays Creek at the point of discharge. Kayes Creek still has a straight, narrow flow that reaches the open water of Farmington Bay. Photo Number 2 (2004) shows an expansion of the Phragmites area and a broadening discharge channel. This trend continues in Photo number 3 (2007) and Photo number 4 (2009). Photo number 4 illustrates how the Phragmites has spread the water flow so wide that much of the water is lost to evapotranspiration before reaching the open water in the Great Salt Lake. The spread of the flowing water has

resulted in a large, dense Phragmites stand that degrades wetland areas and diminishes wildlife habitat.

The Marsh Master can be effectively used in this situation to both treat and mow Phragmites in order to restore flowing channels from East side water sources through this Great Salt Lake wetland habitat. These activities will remove Phragmites vegetation and increase the quantity of water reaching the open water of the Lake. Using the Marsh Master to remove Phragmites will increase channelization of the East side flow that will reduce the availability of water to the existing Phragmites patches and hopefully decrease the quantity of viable Phragmites in the area.

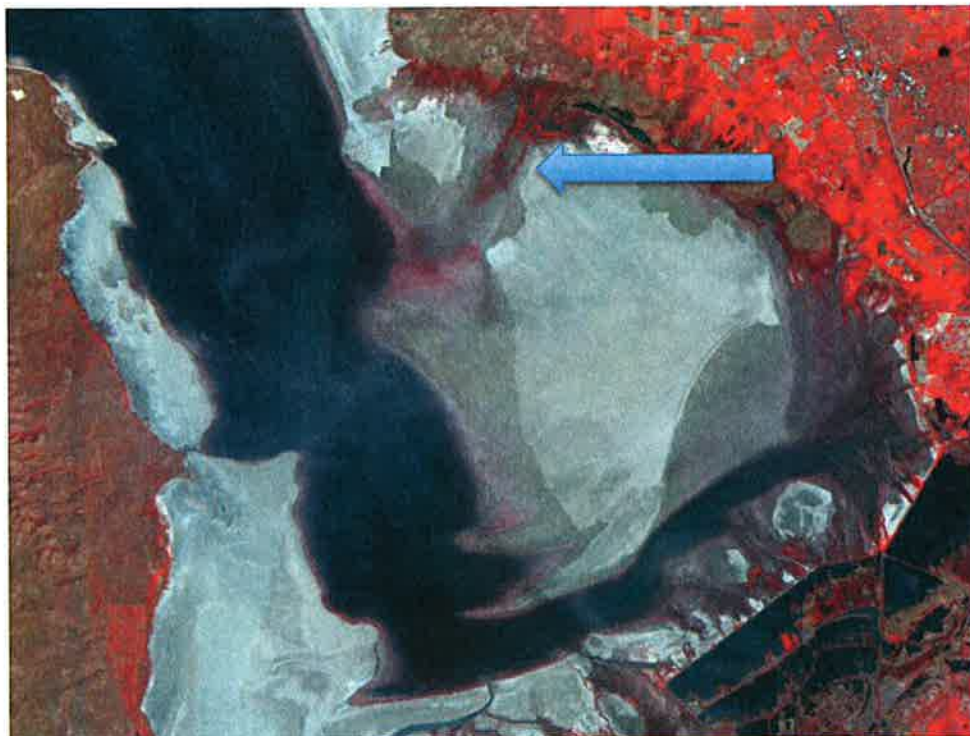
FFSL and other agencies would provide operations, supply of consumables and repair and maintenance as a local contribution to the project. The Marsh Master would be used by FFSL for many years to effectively control and manage Phragmites in addition to this specific project. The purchase of the Marsh Master will provide FFSL with the tools and resources necessary to manage and control Phragmites on and around the Great Salt Lake. Doing so will restore thousands of acres of valuable wetland habitat and also increase access for public recreational opportunities on the Great Salt Lake.

Table 3.

Phragmites-Marsh Master Budget	
Expense	Total Cost
Marsh Master-Mower/Sprayer and Trailer	\$162,800.00
Additional Attachments	\$ 25,200.00
Total Grant Request	\$ 188,000.00



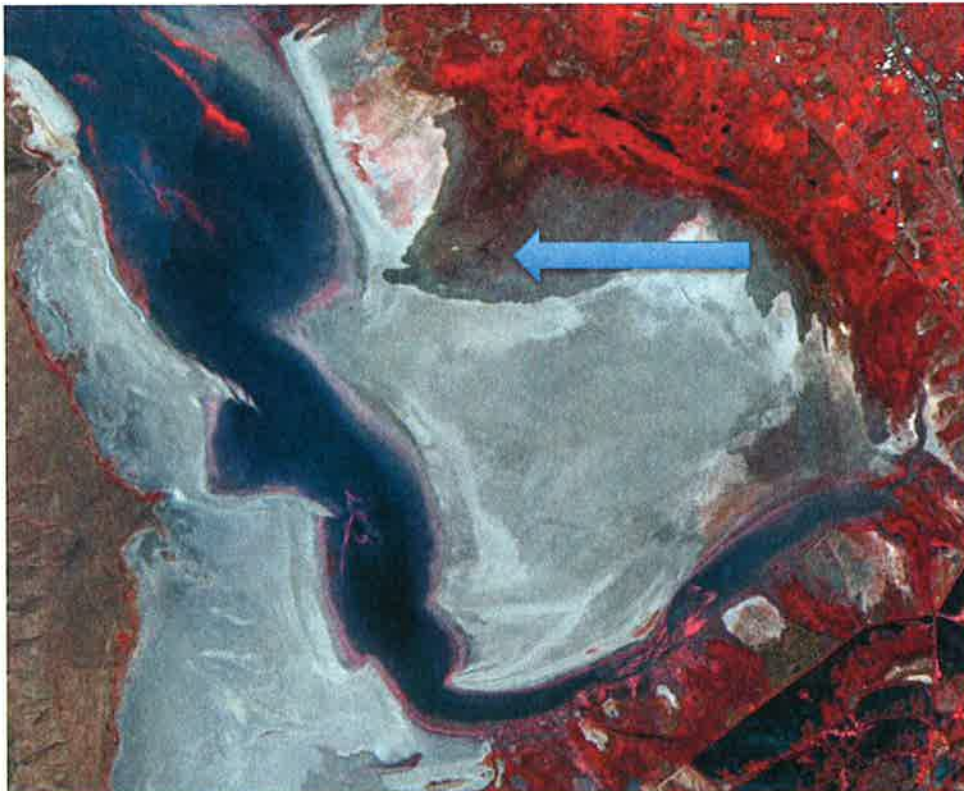
Picture 1 – July 2002 Farmington Bay



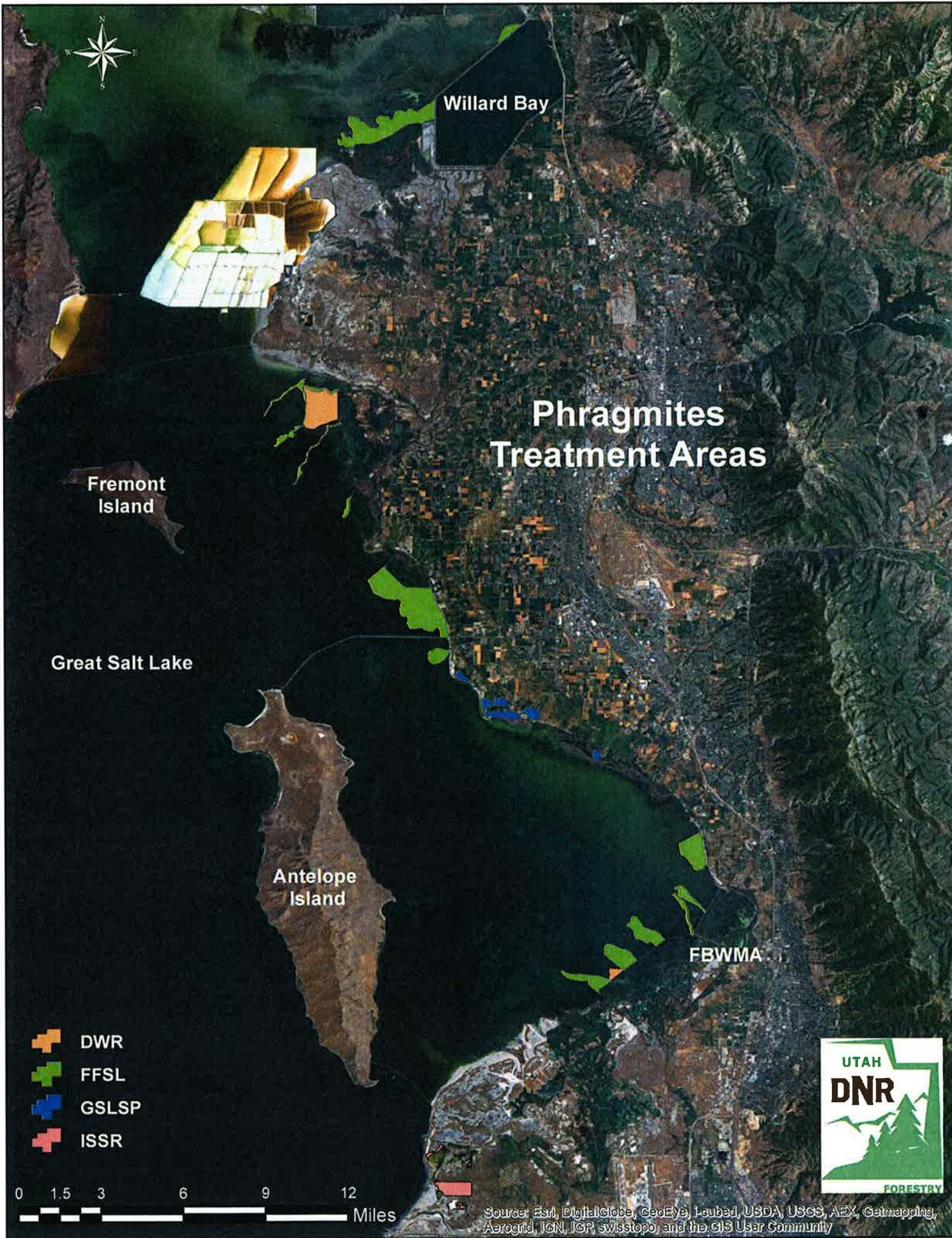
Picture 2 – May 2004 Farmington Bay



Picture 3 – July 2007 Farmington Bay



Picture 4 – September 2009 Farmington Bay





DEPARTMENT OF WATERSHED SCIENCES
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May 1, 2014

Emily Bartusek
Division of Water Quality
PO Box 144870
Salt Lake City, UT 84114

Dear Ms. Bartusek:

I am submitting this letter of support for the Division of Forestry, Fire and State Lands' (FFSL) application for funding from the Willard Bay Settlement funds. We (myself and my graduate students) have been working with FFSL to conduct research on Phragmites management techniques on the Great Salt Lake. We have recently provided the Division with a Phragmites prioritization model that FFSL is using to identify Phragmites treatment areas. We will be working with FFSL in 2015 to begin conducting research on Phragmites grazing techniques on the Great Salt Lake. For these reasons we are supportive of FFSL's request to purchase a Marsh Master for Phragmites mowing and removal on the Great Salt Lake.

We look forward to continuing our partnership with the Division of Forestry, Fire and State Lands. The purchase of the proposed Marsh Master will provide significant benefits to FFSL and to USU researchers in our efforts to control and manage Phragmites on the Great Salt Lake.

Sincerely,

Karin M. Kettenring



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Wildlife Resources

GREGORY SHEEHAN
Division Director

May 1, 2014

Emily Bartusek
Division of Water Quality
PO Box 144870
Salt Lake City, UT 84114

Dear Ms. Bartusek:

The Division of Wildlife Resources (DWR) is submitting this letter of support for the Division of Forestry, Fire and State Lands' (FFSL) proposal for funding from the Willard Bay Mitigation funds. DWR is responsible for management of five Wildlife Management Areas on the Great Salt Lake. Each of the WMAs are adjacent to lands managed by the FFSL. DWR works closely with FFSL to implement effective solutions to Phragmites management in these areas. In recent years, DWR has been limited in our ability to effectively burn large areas of Phragmites on the Great Salt Lake due to increased air quality concerns along the Wasatch Front. These limitations have motivated DWR and FFSL to seek alternative options for physical Phragmites removal along the lake.

DWR is confident that the purchase of the Marsh Master will increase the Division's ability to effectively utilize and leverage other Phragmites management funding that has been received and will significantly improve the Division's ability to manage and control Phragmites on the Great Salt Lake.

Sincerely,

Blair Stringham
Migratory Game Bird Coordinator



CENTRAL DAVIS SEWER DISTRICT

May 1, 2014

Emily Bartusek
Division of Water Quality
PO Box 144870
Salt Lake City, UT 84114

Dear Ms. Bartusek:

Central Davis Sewer District is submitting this letter of support for the Division of Forestry, Fire and State Lands' (FFSL) application for funding from the Willard Bay Mitigation funds. Central Davis Sewer District has seen a continuous invasion of Phragmites along the east side of Great Salt Lake since the late 1990's. Phragmites invasion adjacent to the Central Davis Sewer District's treatment facilities has diminished native wetlands, prevented flows from reaching the Great Salt Lake and enlarged the mosquito breeding areas. These issues are of significant concern to the District and are supportive of FFSL efforts to begin active management and control of Phragmites.

Central Davis Sewer District will work with the Division to plan and implement the Phragmites removal projects in the Kayes Creek and the District's discharge areas. The use of the Marsh Master on this and many other projects will increase the Division's ability to effectively manage and control Phragmites in this area and throughout the entire Great Salt Lake.

Sincerely,



Leland Myers, P.E.
District Manager